

# MAT 300/500 Homework 7 – Spring 2021

Due Date: Tuesday, March 30

1. Let  $f(t)$  be defined below as a sum of quadratic  $B$ -splines associated to the knot sequence:  $\mathbf{t} = \{0, 1, 2, 3, 4, 5, 6, 7\}$ .

$$f(t) = 3\mathcal{B}_0^2(t) + 2\mathcal{B}_1^2(t) - \mathcal{B}_2^2(t)$$

For each of the following calculations show all intermediate steps to arrive at the final answer.

- (a) Compute  $f(2.5)$  with the DeBoor algorithm.
- (b) Compute  $f(2.5)$  with Divided Differences.
- (c) Compute  $f(2.5)$  with Cramer's Rule as a sum of truncated power functions.